

IN THE SPECIFICATION:

Please insert the following **Brief Description of the Drawings** after the paragraph ending at page 8, line 2, and before the **Detailed Description of the Invention**.

Brief Description of the Drawings

FIG. 1 is a flowchart illustrating one embodiment of the invention.

Please add the following paragraphs after the paragraph ending on page 9, line 3 and before the subheading beginning on page 9, line 4, as set forth below:

As discussed above, the first step of the classifying method is to calculate an Object vector, *i.e.*, an ordered set of a small number of data points or scalars (between 4 and 100, more typically between 5 and 30) that is derived from the data stream, FIG. 1, 110 associated with the Object to be classified. The transformation of the data stream into an Object vector is termed "abstraction," FIG. 1, 120. The most simple abstraction process is to select a number of points of the data stream. However, in principle the abstraction process can be performed on any function of the data stream. In the embodiments presented below abstraction is performed by selection of a small number of specific intensities from the data stream.

In one embodiment, the second step of the classifying method is to determine in which data cluster, if any, the vector rests. FIG. 1, 130. Data clusters are mathematical constructs that are the multidimensional equivalents of non-overlapping "hyperspheres" of fixed size in the vector space. The location and associated classification or "status" of each data cluster is determined by the learning algorithm from the training data set. The extent or size of each data cluster and the number of dimensions of the vector space is set as a matter of routine experimentation by the operator prior to the operation of the learning

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algorithm. If the vector lies within a known data cluster, the Object is given the classification associated with that cluster. FIG. 1, 150. In the most simple embodiments the number of dimensions of the vector space is equal to the number of data points that is selected in the abstraction process. Alternatively, however, each scalar of the Object vector can be calculated using multiple data points of the data stream. If the Object vector rests outside of any known cluster, a classification can be made of atypia, or atypical sample. FIG. 1, 140.
